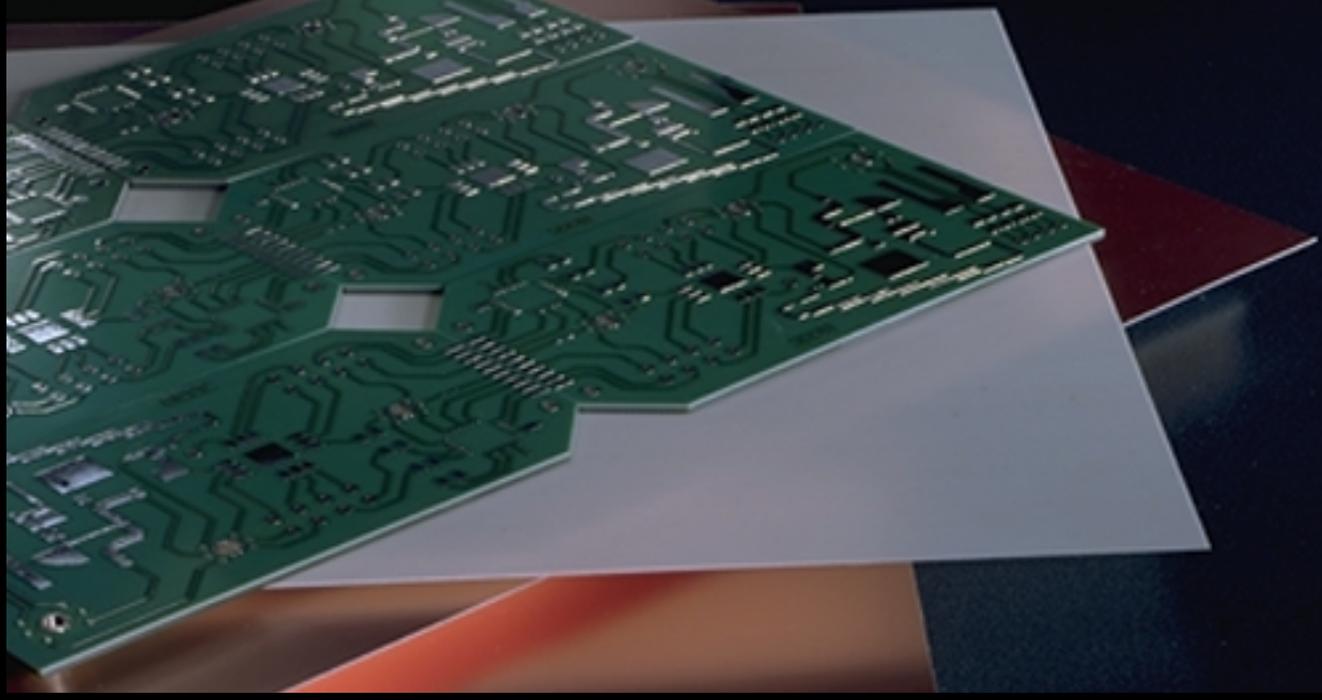


RO4003[®], RO4350[®] High Frequency Laminates

Woven Glass Reinforced Ceramic Filled Thermoset Materials



FEATURES AND BENEFITS:

Non-PTFE.

- Fabricates like FR4.
- Processable by a larger number of fabricators.
- UL flammability rating (RO4350).
- No special through-hole treatments or handling required.
- Lower processing and assembly costs.

Excellent high frequency performance due to low dielectric tolerance and loss.

- Ideal for applications with higher operating frequency requirements.

Stable electrical properties versus frequency.

- Repeatable designs.
- Ideal for multilayer and mixed dielectric constructions (hybrid).

Low thermal coefficient of dielectric constant.

- Ideal for applications sensitive to temperature change.

Low Z-axis expansion.

- Ensures reliable plated through hole quality.

Low in-plane expansion coefficient.

- Excellent reliability of surface mounted assemblies.
- Suitable for use with epoxy glass multilayer board hybrid designs.

Excellent dimensional stability.

- High production yields.

Volume manufacturing process.

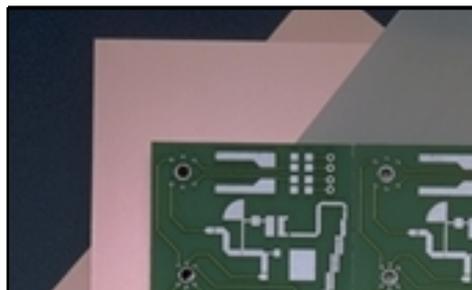
- Economical laminate pricing.

High glass transition temperature (280°C).

- Will not warp during reflow assembly.
- Ensures plated through hole reliability.

Typical Applications:

- *LNB's for Direct Broadcast Satellites*
- *Microstrip Patch Antennas*
- *PCS and Cellular Base Station Antennas and Power Amplifiers*
- *Spread Spectrum Communication Systems*
- *RF Identification Tags*



ROGERS
SINCE 1832

PROPERTY	Typical Values		Units
	RO4003	RO4350	
Dielectric Constant @ 10 GHz	3.38 ± 0.05	3.48 ± 0.05	–
Thermal Coefficient of ϵ_r @ 0 to 100°C	+40	+50	ppm/°C
Dissipation Factor @ 10 GHz	0.0027	0.0040	–
Youngs Modulus	X 3700 (25,510) Y 3900 (26,889)	1664 (11,473)	kpsi (MPa)
Volume Resistivity	1.7×10^{10}	1.2×10^{10}	Mohm•cm
Surface Resistivity	4.2×10^9	5.7×20^9	Mohm
Moisture Absorption	0.06	0.06	%
Dimensional Stability	X,Y <0.3	<0.5	mm/m
Specific Gravity 23°C	1.8	1.9	–
Peel Strength	1.1 (6.4)	0.9 (5.3)	N/m (pli)
Thermal Conductivity	0.64	0.62	W/m/°K
Coefficient of Thermal Expansion @ 0 to 100°C	X 11 Y 14 Z 46	14 16 50	ppm/°C
Glass Transition (Tg)	>280	>280	°C
UL Flammability Rating	NO	94-VO	–

Availability:

Standard Thicknesses:

RO4350: 0.0066" (0.168mm), 0.010" (0.254mm), 0.020" (0.508mm), 0.030" (0.762mm), 0.060" (1.524mm)

RO4003: 0.008" (0.203mm), 0.020" (0.508mm), 0.032" (0.813mm), 0.060" (1.524mm)

Standard Sheet Sizes: 24" X 18" (610 X 457mm), 12" X 18" (305 X 457mm)

Standard Copper Cladding: 1/2 oz (17µm) and 1 oz (35µm) electrodeposited copper.

Rogers laminates can be purchased by contacting your U.S. customer service representative or one of our overseas offices. Telephone numbers are listed below.

The information and guidelines contained in this document are intended to assist you in designing with RO4000 series. They are not intended to and do not create any warranties, express or implied, including any warranty of merchantability or fitness for a particular application. The user should determine the suitability of Rogers materials for each application. Values are averages and not guaranteed.

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Standard Thickness' and Panels Sizes for R03000® and R04000® Series High
Frequency Circuit Materials

R03000® Series Laminate Standard Dielectric Thickness Standard Panel Sizes
Grade Dielectric Constant

R03003™

R03035™ 3.00

3.500.005" (0.13 mm) ± 0.0005

0.010" (0.25 mm) ± 0.0007

0.020" (0.50 mm) ± 0.001

0.030" (0.75 mm) ± 0.0015

0.060" (1.52 mm) ± 0.00312"x18" (304.8 x 457.2 mm)

24"x18" (609.6 x 457.2 mm)

R03006™

R03010™ 6.15

10.20.005" (0.13 mm) ± 0.0005

0.010" (0.25 mm) ± 0.0007

0.025" (0.64 mm) ± 0.001

0.050" (1.27 mm) ± 0.00218"x 12" (457.2 mm x 304.8 mm)

18" x 24" (457.2 mm x 609.6 mm)

R03203™ 3.020.010" (0.254 mm) ± 0.0007

0.020" (0.508 mm) ± 0.001

0.030" (0.762 mm) ± 0.0015

0.060" (1.524 mm) ± 0.00318" x12' (457.2 X 304.8 mm)

18" x24" (457.2 X 609.6 mm)

R03206™

R03210™ 6.15

10.20.025" (0.635 mm) ± 0.001

0.050" (1.27 mm) ± 0.00218" x12' (457.2 X 304.8 mm)

18" x24" (457.2 X 609.6 mm)

R03000 series material standard cladding is: 1/2 oz. (17 µm) and 1 oz. (35 µm) two sides

R04000® Series High Frequency Circuit Materials Standard Dielectric
Thickness Standard Panel Sizes

Grade Dielectric Constant

R04003C™ 3.380.008" (0.203mm) ± 0.0010

0.012" (0.305mm) ± 0.0010

0.016" (0.406mm) ± 0.0015

0.020" (0.508 mm) ± 0.0015

0.032" (0.813 mm) ± 0.0020

0.060" (1.524 mm) ± 0.004012"x18" (304.8 mm x 457.2mm)

24"x18" (609.6 mm x 457.2mm)

R04003C material standard cladding is: 1/2 oz. (17 µm) and 1 oz. (35 µm)
electrodeposited copper two sides.

4350B™ 3.480.0066" (0.168mm) ± 0.0007

0.010" (0.25 mm) ± 0.0010

0.0133" (0.338mm) ± 0.0015

0.0166" (0.422mm) ± 0.0015

0.020" (0.51 mm) ± 0.0015

0.030" (0.76 mm) ± 0.0020

Rogers Corp Microwave Materials Unit-Standard Thickness. txt
0.060" (1.52 mm) ±0.004012"x18" (304.8 mm x 457.2mm)
24"x18" (609.6 mm x457.2mm)
R04350™ material standard cladding is: 1/2 OZ (17mm) and 1 oz. (35 µm)
electrodeposited copper two sides

Panel sizes and thicknesses for RT/duroid, TMM, and ULTRALAM 2000 high frequency laminates.

For other claddings or panel sizes please contact our Customer Service Department.

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RT/duroid, TMM, ULTRALAM, R/flex, R/flex CRYSTAL, R03000, R03003,
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